

## **REMARKS**

Claims 1-35 were originally filed in the instant application. Claims 37-40 were added by a Preliminary Amendment dated March 17, 2003. Claims 1-26 and 36 are drawn to a non-elected invention and have been withdrawn from consideration by the Patent Office. In Applicant's response dated November 5, 2003, claims 1-26 and 36 were canceled. In this Response, Applicant has added claims 41-53 and cancelled claim 30. Claims 27-29, 31-35 and 37-53 are therefore pending. No new matter has been added by the addition of the new claims, full support being found throughout the originally filed specification, claims, and drawings. Entry of this Response and Amendment is hereby requested.

### ***Rejections under 35 U.S.C. § 112, Second Paragraph***

Claims 27-35 and 37-40 stand rejected under 35 U.S.C. § 112, second paragraph. The Examiner states:

The language of the claims and the disclosure in Figure 1 do not correspond to a known chemical terminology or manner of depicting the structures of the elements in the claims. Thus, the claims are unclear as interpreted in light of the specification as to the metes and bounds of the assay. January 8, 2004 Office Action at page 2.

Fructosamine is not the proper name for such a construct. And further, the sugar diagrammed in Figure 1 is not even fructose. Thus, applicant's scientifically incorrect arguments based on improper nomenclature and confusing and inaccurate diagrams are not persuasive. January, 8, 2004 Office Action at page 3.

Applicant respectfully disagrees with the Examiner's assertion that claims 27-35 and 37-40 do not comply with the requirements of section 112, second paragraph. As a threshold matter, in evaluating the definiteness of claims, one must look beyond claim 27 and Figure 1 in the specification. Also, the Examiner's interpretation of whether applicant's nomenclature or figures are clear and definite is not dispositive. The applicable legal standard is what one of skill

in the art would understand from the specification. The CCPA has made the following remarks regarding this standard:

[I]t is well settled that the disclosure of an application is not only what is expressly set forth in words or drawings, but what would be understood by persons skilled in the art. As was said in *Webster Loom Co. v. Higgins et al.*, 105 U.S. 580, 586, the applicant 'may begin at the point where his invention begins, and describe what he has made that is new and what it replaces of the old. That which is common and well known is as if it were written out of the patent and delineated in the drawings.' *In re Howarth*, 654 F.2d 103, 210 USPQ 689, 692 (C.C.P.A.) (quoting *In re Chilowsky*, 229 F.2d 457, 460, 108 USPQ 321, 324 (C.C.P.A. 1956)).

The Examiner asserts that "fructosamine" is an improper name for the pyranose ring structure illustrated in Figure 1, and that the diagrams of the instant application are "confusing". In support of this assertion, the Examiner has presented an illustration of a fructosamine structure that is labeled "absolute stereochemistry." The illustration relied upon by the Examiner, however, is merely a generic alternative structural representation.

Contrary to the Examiner's assertion, the structure depicted in Figure 1 of the instant application is commonly used by those of skill in the art to depict fructosamine and this is supported by literature in the art. See, for example, Figure 5 of "Mechanism of the degradation of non-enzymatically glycosylated proteins under physiological conditions," Smith P.R. and Thornalley P.J., *Eur. J. Biochem.*, 1992, 210:729-739, submitted as document No. 68 provided in Applicant's Information Disclosure Statement filed July 31, 2001 and considered by the Examiner on May 19, 2003. Applicant respectfully submits that the structure and nomenclature presented in Figure 1 of the instant application are consistent with accepted convention in the art.

The Examiner asserts that Applicants " $\alpha$ -dicarbonyl" moiety shown in Figure 1 appears to be misnamed (January 8, 2004 Office Action at page 3), and that "the products of the reaction appear to be enzyme-NHR and  $\alpha$ -dicarbonyl." (January 8, 2004 Office Action at page 2). It is

clear from the diagrams of Figure 1 and the Figure 1 legend that a “ $\alpha$ -dicarbonyl sugar” is a reaction product. If desired, Applicant will amend Figure 1 to specify the “ $\alpha$ -dicarbonyl sugar” that is otherwise apparent from the structure and the Figure 1 legend.

The Examiner further asserts that the sugar diagrammed in Figure 1 is “not even fructose.” Figure 1 refers to glucose and fructosamine and does not label any structure as being “fructose.” Applicant respectfully requests that the Examiner clarify this assertion.

In the Office Action dated May 28, 2003, the Examiner alleged that claim 27 was indefinite because the claim did not recite the word “catalyzed” after product. For the reasons given in Applicant’s Response dated November 5, 2003, this allegation is incorrect. However, for the sole purpose of expediting prosecution on the merits, Applicant has amended claim 27 herein to insert “catalyzed” after product. This change does not affect the scope of claim 27, because the original claim 27 implicitly described a catalysis by fructosamine oxidase. Accordingly, the Doctrine of Equivalents is fully applicable regarding these amendments to claim 27.

Applicant has also inserted the phrase “in a sample” after the word “activity.” This change is not made in response to any rejection.

Applicant respectfully submits that Claim 27 and its dependent claims, Claim Nos. 28, 29, 31-35 and 37-40 satisfy the requirements of 35 U.S.C. § 112, second paragraph, and asks that the rejection be withdrawn.

#### Claims 28 and 29

Regarding claims 28 and 29, the Examiner states:

[I]t is unclear what applicant means by "superoxide reaction product" or "oxygen free radical reaction product". Are these intended to be products of the reaction?

In Figure 1, the products of the reaction appear to be enzyme-NHR and  $\alpha$ -dicarbonyl. January 8, 2004 Office Action at page 2.

Applicant traverses the rejection of claims 28 and 29 under 35 U.S.C. § 112, second paragraph. In Applicant's Response dated November 5, 2003, Applicant pointed out that descriptions of "superoxide reaction product" and "oxygen free radical reaction product" are provided in the original specification. See Figure 1, which illustrates the conversion of  $O_2$  to  $O_2^{\cdot-}$ , and paragraph 0051 of US2002/0034775 which states, "Fructosamine oxidase catalyses the degradation of fructosamine(s) with concurrent reduction of molecular oxygen yielding a superoxide reaction product (FIG. 1). Superoxide is unstable in aqueous solution with spontaneous dismutation to hydrogen peroxide and oxygen."

The controlling legal standard is whether one skilled in the art would understand the bounds of the claim when read in light of the specification (see page 5, Applicant's November 5, 2003 Response). Applicant respectfully submits claims 28 and 29 are clear and definite when read in the context of the specification, and requests that these rejections be reconsidered and withdrawn.

#### Claim 30

The Examiner asks, "[w]here is the mechanism disabled? There appears to be missing some connecting elements and is not clear." January 8, 2004 Office Action at page 2. In this Response, Claim 30 is cancelled. Thus, the rejection with respect to Claim 30 is moot and Applicant requests that this rejection be withdrawn. However, Applicant notes that the language, "wherein a superoxide scavenging mechanism is disabled," from former Claim 30 is now incorporated into Claim 27, and that this claim specifies the mechanism is disabled in the method of the invention. See, e.g., paragraph 0054 of the published specification.

***Rejections under 35 U.S.C. § 102(b)***

Claims 27-29, 34, and 35 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Hourichi *et al.* The Patent Office has determined that claims 30-33 and 37-40 are directed to allowable subject matter. May 28, 2003 Office Action at page 3.

**Claim 27**

Applicant has previously described deficiencies regarding the Hourichi *et al.* rejection. Applicant respectfully submits that the Patent Office has not met its burden of establishing a *prima facie* case of anticipation in the Office Action dated January 8, 2004. However, for the sole purpose of expediting prosecution of this application, Applicant has amended claim 27 to include the limitations of claim 30 (previously determined allowable). Applicant request that the rejections under 35 U.S.C. §102(b) over Hourichi *et al.* be reconsidered and withdrawn.

**Claims 41 and 42**

Hourichi *et al.*, entitled “Purification and Properties of Fructosyl-amino Acid Oxidase from *Corynebacterium* sp. 2-4-1,” relates to an enzyme from a soil bacterium. New claim 41 is directed to a method of determining a level of mammalian fructosamine oxidase activity and, like former claim 37 (determined allowable), is directed to an assay of a non-bacterial enzyme. New claim 42, like former claim 37, is directed to an assay on a sample taken from a human patient. Applicant requests entry and consideration of these claims and, for the reasons stated above, allowance of claims 41 and 42.

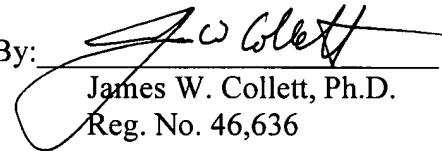
## CONCLUSION

For the reasons set forth above, Applicant respectfully submits that all claims in the application are in condition for allowance. The Examiner is encouraged to contact the undersigned if it is believed this would expedite prosecution.

Please charge Deposit Account No. 02-4553 the fee of \$475.00 for a three-month extension of time and for the payment of new claims. No additional fees are believed to be due at this time; however, if any fee should become due or credit become payable during the pendency of these proceedings, the Commissioner is authorized to charge or credit the same to Deposit Account No. 02-4553.

Respectfully submitted,

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